

WHAT IS CLAIMED IS:

1. A sample screening apparatus, comprising:
a plurality of capillaries held together in an array, wherein each capillary comprises at least one wall defining a lumen for retaining a sample;
interstitial material disposed between adjacent capillaries in the array; and
one or more reference indicia formed within of the interstitial material.
2. The apparatus of claim 1, wherein each capillary has an aspect ratio of between 10:1 and 1000:1.
3. The apparatus of claim 2, wherein each capillary has an aspect ratio of between 20:1 and 100:1.
4. The apparatus of claim 2, wherein each capillary has an aspect ratio of between 40:1 and 50:1.
5. The apparatus of claim 1, wherein each capillary has a length of between 5mm and 10 cm.
6. The apparatus of claim 1, wherein the lumen of each capillary has an internal diameter of between 3 μ m and 500 μ m.
7. The apparatus of claim 1, wherein the plurality of capillaries are fused together to form the array.
8. The apparatus of claim 1, wherein the reference indicia are formed at intervals of a number of capillaries.
9. The apparatus of claim 1, wherein the reference indicia are formed at edges of the array.
10. The apparatus of claim 1, wherein the reference indicia are formed of glass.



11. A capillary for screening a sample, wherein the capillary is adapted for being held in an array of capillaries, the capillary comprising:
- a first wall defining a lumen for retaining the sample, wherein the first wall forms a waveguide for propagating detectable signals therein; and
 - a second wall formed of a filtering material, for filtering excitation energy provided to the lumen to excite the sample.
12. The capillary of claim 11, wherein the second wall circumscribes the first wall.
13. The capillary of claim 11, wherein the second wall is formed of extra mural absorption (EMA) glass.
14. The capillary of claim 13, wherein the EMA glass is tuned to filter specific wavelengths of light.
15. A capillary array for screening a plurality of samples, comprising:
- a plurality of capillaries, held together into the array, wherein each capillary includes a first wall defining a lumen for retaining the sample, and a second wall circumscribing the first wall, for filtering excitation energy provided to the lumen to excite the sample.
16. The array of claim 15, wherein the second wall of each capillary is formed of a filtering material.
17. The array of claim 16, wherein the filtering material is EMA glass.
18. The array of claim 17, wherein the EMA glass is tuned to filter specific wavelengths of light.
19. The array of claim 15, further comprising interstitial material between adjacent capillaries.

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20. The array of claim 19, wherein the interstitial material is adapted to absorb light.

21. A method for incubating a bioactivity or biomolecule of interest, comprising:
introducing a first component into at least a portion of a capillary of a capillary array,
wherein each capillary of the capillary array comprises at least one wall defining a lumen for
retaining the first component;
introducing air into the capillary behind the first component; and
introducing a second component into the capillary, wherein the second component is
separated from the first component by the air.

22. The method of claim 21, wherein either the first or second component includes
at least one particle of interest.

23. The method of claim 22, wherein the other of the first and second component
includes a developer for causing an activity of interest by the particle of interest.

24. The method of claim 22, wherein the particle of interest is a molecule.

25. The method of claim 21, further comprising disrupting the air to combine the
first component with the second component.

26. The method of claim 21, wherein the first and second components are liquids.

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27. A method of incubating a sample of interest, comprising:
introducing a first liquid labeled with a detectable particle into a capillary of a capillary array, wherein each capillary of the capillary array comprises at least one wall defining a lumen for retaining the liquid and the detectable particle;
submersing one end of the capillary into a fluid bath containing a second liquid; and
evaporating the first liquid from the opposite end of the capillary to draw the second liquid into the capillary tube.

28. The method of claim 27, wherein the second liquid contains a developer for causing an activity of interest by the detectable particle.

29. The method of claim 28, wherein the developer includes at least one nutrient.

30. The method of claim 29, wherein the nutrient includes oxygen.

31. A method of incubating a sample of interest, comprising:
introducing a first liquid labeled with a detectable particle into a capillary of a capillary array, wherein each capillary of the capillary array comprises at least one wall defining a lumen for retaining the first liquid and the detectable particle, and wherein the at least one wall is coated with a binding material for binding the detectable particle to the at least one wall;
removing the first liquid from the capillary tube, wherein the bound detectable particle is maintained within the capillary; and
introducing a second liquid into the capillary tube.

32. The method of claim 31, wherein the binding material includes DNA.

33. The method of claim 31, wherein the binding material includes an antibody.

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34. A method of incubating a sample of interest, comprising:
introducing a liquid labeled with a detectable particle into a capillary of a capillary array, wherein each capillary of the capillary array comprises at least one wall defining a lumen for retaining the liquid and the detectable particle;
introducing paramagnetic beads to the liquid; and
exposing the capillary containing the paramagnetic beads to a magnetic field to cause movement of the paramagnetic beads in the liquid within the capillary.

35. The method of claim 35, further comprising reversing polarity of the magnetic field to cause reverse movement of the paramagnetic beads.

36. A method of recovering a sample from one of a plurality of capillaries in a capillary array, comprising:
determining a coordinate position of a recovery tool;
detecting a coordinate location of a capillary containing the sample;
correlating, via relative movement between the recovery tool and the capillary containing the sample, the coordinate position of the recovery tool with the coordinate location of the capillary; and
providing contact between the capillary and the recovery tool.

37. The method of claim 34, further comprising removing, with the recovery tool, the sample from the capillary containing the sample.

38. A recovery apparatus for a sample screening system, wherein the system includes a plurality of capillaries formed into an array, the apparatus comprising:
a recovery tool adapted to contact at least one capillary of the capillary array and recover a sample therefrom;
an ejector, connected with the recovery tool, for ejecting the recovered sample from the recovery tool.

39. The recovery apparatus of claim 37, wherein the recovery tool includes a needle connected with a collection container.

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40 39. The recovery apparatus of claim 37, wherein the recovery tool includes an aspirator for recovering the sample.

41 40. The recovery apparatus of claim 37, wherein the ejector includes a jet mechanism adapted to expel the recovered sample.

42 41. The recovery apparatus of claim 37, wherein the jet mechanism is operable by thermal energy applied thereto.

43 42. The recovery apparatus of claim 41, further comprising a heating element connected to the jet mechanism.

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